TOWN OF ENNIS.

RETURN to an Order of the Honourable The House of Commons,
dated 19 February 1849;—*for*,

COPIES "of any REPORTS made to the COMMISSIONERS of the BOARD of WORKS in *Ireland* on the Practicability of rendering the Town of *Ennis*, in the County of *Clare*, a SEAPORT; together with an ESTIMATE of the COST of WORKS for such Purpose, and the probable Amount of Time requisite for their Completion."

Ordered, by The House of Commons, *to be Printed*, 23 *February* 1849.

REPORT to the COMMISSIONERS of PUBLIC WORKS on the IMPROVEMENT of the NAVIGATION of the River *Fergus*, from the *Shannon* to the Village of *Clare*, and its proposed Extension thence up to the Town of *Ennis*, in connexion with the Drainage of the above-named District; together with a few Remarks on the proposed Inclosure and Reclamation from the Sea of large Tracts of Sloh Lands in the Estuary of the *Fergus*, in connexion with such Navigation. By *John W. Kelly*, C. E., M. Instn C. E. I. 1848.

THE Fergus is the largest river in the county of Clare. The extent of its natural basin, or of the country which it unwaters, exceeds 200 square miles above the extremity of the tideway. The basin is principally composed of cavernous limestone, and being generally flat, and its waters having to pass through numerous lakes, and in many places through rocky fissures and cavernous passages, they carry little or no sediment to the sea. The river has its source not far from the village of Kilfenora, and passing close to the village of Currofin, through the town of Ennis and the village of Clare, joins the Shannon about 17 miles below the city of Limerick, after traversing in a very circuitous course a distance of 48 statute miles; of this distance, 32 miles are above tideway, and 16 thence to the junction of the Shannon.

The flooded lands along the Fergus and its tributaries, from their source down as far as the village of Clare, are being improved, as the Commissioners are aware, under the Drainage Acts; and the contemplated extension of the navigation from Clare to Ennis is sought to be effected, at the same time, under the provisions of these Acts, so as to render available the mutual facilities and economy of carrying on both measures in conjunction.

So much has been already written upon the improvement of the navigation of the Fergus up to Clare, and its extension thence up to the town of Ennis, and so well is the subject understood, and so general has been the concurrence of parties as to the importance of the measure, and the great facilities naturally presented for effecting it, that, in the present instance, it is deemed sufficient to set forth the leading facts of the case, and those with more brevity than the importance of the measure would otherwise demand.

The borough of Ennis, the principal town of the county, is situate at the head of the tideway; its population, in 1841, was 9,318; at present it may be said to be about 10,000 inhabitants. It receives the import and export trades of about 700 square miles of the surrounding country, embracing the towns of Miltown, Malhay, Lehinch, Ennistymon, Kilfenora, Currofin and Tulla, together with the numerous villages of Liscanor, Lisdoonvarna, Tubberindoney, Crusheen,

&c., and including in all a population of over 150,000 persons. Were the navigation opened up to Ennis and improved, so as to admit a larger class of vessels than at present to Clare, it is but reasonable to conclude that it would become the depôt of a still larger tract of country, receiving the whole or a large portion of the trade of Gort which now goes to Galway, and of Newmarket-on-Fergus which now goes to Limerick, &c. Notwithstanding the great importance to the town and adjoining country of making Ennis a seaport, and the trade and industrial enterprise that may be expected to follow, as in the case of several of the English and Scotch as well as Irish towns, which were likewise comparatively insignificant until navigations were improved or opened up to them, yet the fine river and estuary of the Fergus remain up to the present time in almost a state of nature.

To the improvement of this fine estuary there is but one obstacle of importance, and that obstacle not a bar or shifting sand at the mouth of the river, difficult of being removed, but a ledge of limestone rock crossing it about three miles below the town, with deep water above and below it, sufficient for all the purposes of maritime commerce; yet for want of a comparatively small outlay to remove it, the town is locked up from the numerous advantages of a seaport: its exports and imports, including those of the extensive district before alluded to, having to be carried a distance of three statute miles over land to and from Clare, above which vessels cannot at present float.

The obstacle alluded to, once removed, would leave an unimpeded navigation, not liable, as in many other cases, to subsequent accumulations; on the contrary, the large additional volume of water that would pass up and down at the influx and efflux of each tide, as subsequently more fully explained, would tend very considerably to deepen and keep scoured the channel through the muddy estuary of the Fergus, below Clare.

Detailed Description of the Estuary and Tidal Portion of the River.

The Shannon, the largest river in the United Kingdom, flows from Limerick in nearly a westerly direction into the Atlantic Ocean; its capacious embouchure, which is about 60 statute miles below the city of Limerick (and nearly the same distance below the town of Ennis), is peculiarly favourable to the easy and safe reception of all sized vessels in most of the prevalent winds.

The Fergus meets it nearly at right angles, about 43 miles above its embouchure, and runs inland in a northerly direction. At the line of junction the breadth of the Fergus at high-water is about four statute miles, and continues nearly so, interspersed with several islands, for about six miles upwards; thence to the junction of the Latoon River, about four miles further up, the estuary gradually contracts to about half a mile; and at Clare, about three miles still further up, its principal channel diminishes to 200 feet in width. From Clare to Ennis, a distance of three miles, the river is uniformly about 120 feet wide. At low-water the channel of the Fergus is about a mile wide at the junction with the Shannon; diminishes gradually thence to the Latoon River, which is about 150 feet; and from the latter point, up to Ennis, it varies from about 100 to 120 feet in width.

The large space on either side of the channel up to the line of high-water is a deep mud-bank or "slob," the level of which is generally about that of half-tide; and, as more fully described hereafter, offers peculiar facilities for being embanked and reclaimed from the sea.

Vessels of any size or tonnage have at all times of tide sufficient water to come up the Shannon and up the Fergus, as far as Smith's Island, which is four miles from the junction. Here there is good anchorage ground, and vessels can easily proceed thence and arrive at Clare or Ennis (in the event of the navigation being extended) with the flowing tide. A steamer was plying between Clare and Limerick a few years since, which frequently entered the former on the flow; discharged and took in her cargoes, and returned again down river on the ebb of the same tide.

In the reach of the Fergus from the Shannon to Smith's Island there is a depth of from 40 to 20 feet at low-water of spring tides. There are two dangerous rocks in this reach that uncover at low-water, and require beacons: one, the "Horse Rock," at the entrance of the Fergus; and the other, the "Foal Rock," in the channel between Feenish and Cooney Islands.

Immediately above Smith's Island the depth at low-water diminishes from 20 to 7 feet, and thence to the "Crow-bar," varies from the latter depth to 2 feet: there is another dangerous rock in about the middle of this reach, called "Borland's Rock," that uncovers at low-water, and requires a heacon. Although the forementioned rocks are at present dangerous in consequence of their contiguity to the sailing channel, there is such ample breadth and depth of water alongside them as to render it unnecessary to do more than have them definitely marked out with heacons.

It is not so, however, with the "Crow-bar." This rock forms a ridge stretching almost across the entire channel, and forms the greatest obstruction; indeed the only one of any consequence to the navigation up to Clare. It rises from 18 inches to 2 feet over low-water of spring tides, and in the direction of the sailing course is from 30 to 60 feet wide at that level. It dips suddenly near the western bank, close to which the water has scoured a comparatively deep channel, but it is so circuitous and narrow that there is considerable difficulty and danger in rounding it, and the vessels are thrown out of the general direction of the sailing course upon the western bank, which is in some places rocky and dangerous.

From the "Crow-bar" up to the quay at Clare, the depth at low-water varies from 6 inches to 2 feet, and in a few places is something less. There are some loose rocks and large stones in parts of this reach that could be removed with facility.

Immediately above the quay of Clare the great barrier to the navigation up to Ennis commences to rise, and occupies somewhat more than a quarter of a mile in length of the river. The top of this barrier rises nearly to the level of high-water of neap tides; those tides may therefore be said to extend only to Clare, while spring tides go as far as Ennis, three miles farther up the river.

The up-stream face of the barrier dips suddenly into deep water, and thence up to Clonroad Bridge, which is within a quarter of a mile of Ennis; there is a depth at the natural level, namely, that of high-water of neap tides varying from 13 to 25 feet. From Clonroad up to Ennis Mills (the limit of the tideway) the river forms a series of deep holes and shallows, with corresponding rapids during the absence of the tides. There is no accumulating rise of the tidal wave in the Fergus as in the Shannon. The rise of ordinary spring tides at Carrigaholt, 11 miles above the mouth of the Shannon, is but 14 feet, and at Limerick it is 18 feet 9 inches; of this increase 4 feet occurs up to the mouth of the Fergus, in a distance of 32 miles, whereas thence up to Limerick, a distance of 17 miles, there is an increase of only 9 inches. The cause of the falling off in the rise in this latter reach is traceable to the manner in which the incoming body of water is partially dissipated in spreading out over the extensive estuary of the Fergus; otherwise the tides would rise higher at Limerick.

The manner in which the Shannon is directly open to the Atlantic, the great breadth and depth of its embouchure and gradual contraction thence up to Limerick, favours the increase in the tidal wave as it advances upwards; and its accumulating rise is interrupted only in the instance adduced, where the channel again opens out into an extensive basin, and the waters expand over a larger surface. The entrance to the Fergus, on the other hand, is obstructed by several islands. Inside these islands there is an open space several square miles in extent, over which the incoming waters spread instead of moving onward with an increasing "head," and hence the absence of an accumulating rise in the tides in the upper part of the river. The rise of ordinary spring tides at the mouth of the Fergus is 18 feet, and at Clare it is only 14 feet. The difference, however, is chiefly owing to the tide being prevented to ebb at Clare to its natural level, by the obstructions in the channel, as I am led to conclude from the few observations I have been enabled to make, that the surface of high-water is nearly level throughout.

The low-water of spring tides is nearly level up to the "Crow-bar;" thence up to Clare there was a rise of 5 feet on the 5th of March last, on which occasion, however, there was a fresh in the river. In summer it is probable that the rise is not more than 3 feet.

There is very little difference of time between the ebb and flow of the tides at the "Crow-bar;" whilst at Clare, during springs, there is a difference of two hours; that is to say, the river remains, at low-water, level for that time ere it commences to flow. This circumstance arises from the want of depth in the channel at low-water, and the natural obstructions, the principal of which is the "Crow-bar."

Proposed Improvements.

Most of the propositions hitherto advanced for extending the navigation up to the town of Ennis have been to ascend from the deep water below to that above Clare by means of a side cut or canal, and a lock; and to preserve at all times the present level of the river from Clare upwards, which, as before stated, is about that of neap tides.

Mr. Mulvany, one of your Commissioners, wrote a paper on the subject in 1842, recommending to dispense with the side cut and lock, and make the river channel navigable, by cutting through the rock at Clare; thus giving free ingress and egress to the tides up to and from Ennis, and making the river a tidal navigation.

Under existing circumstances, there is little doubt that this is the best course to adopt, both as regards the arterial drainage of the adjacent country (which could not be effected by any other cause), as well as the navigation. There are large tracts of land between Ennis and Clare that are under the level of spring tides, and very little above that, of the impounded water in the river. These lands could not be properly drained or reclaimed without lowering the surface of the river, to obtain a fall for discharging the internal waters through sluices, at a sufficiently low level. Neither could the drainage of the upper part of the country, in conjunction with the preservation of the Ennis Mill power, be otherwise achieved. Upon due consideration, it will be also found to be the best and cheapest plan for effecting the navigation.

Mr. David Stevenson (Engineer to the Convention of Royal Burghs in Scotland, &c.) states, in his excellent work, entitled "Remarks on the Improvement of Tidal Rivers," that, "Had Mr. Smeaton's proposition of improving the navigation of the river Clyde, by erecting a dam with locks at Marlinford, below Glasgow, been carried into execution, the channels seaward of the dam would have been to a great extent choked up, and Glasgow never would have stood, as it now does, at the head of Scottish ports." The system, the fallacy of which is here pointed out, is that which was generally proposed for effecting the navigation of the Fergus, with the exception, however, that there was no dam (it may be said) required to be erected across the Fergus, as it is raised by nature nearly to the height proposed.

The opposite system of clearing away all obstructions to the tide was adopted on the Clyde, Tay, Ribble, Dee, &c.; and its success is evinced by the improved navigations of those rivers, and the commercial wealth and prosperity that followed to the cities and towns on their tideways.

Indeed, it may be considered as an axiom, that the most effectual mode of improving a tidal river for navigation is by lowering its bed to the level of low-water of springs, or still further, if practicable, and removing all natural or artificial obstructions to the free passage of the tides as far up the river as possible (even beyond the terminus of the navigation), so as to facilitate the propagation of the tidal wave, and increase the velocity and duration of its currents.

It is well known that the existence of obstructions in rivers and waterways is calculated to create new ones, in the shape of shoals, accumulations of mud, &c.; also that the best method of remedying the evils is by straightening and deepening the course, and making uniform the bottom and sides of the channel, so as to render available the action of the current, in producing a scouring power for preserving the channel clear; since this is the case with inland rivers, how much more so in the tideways? In the former, the quantity of water producing the scouring power is not increased by the improvements; not so in the latter, every impediment removed gives ingress and egress to a corresponding increase in the volume of the tidal water through the channel. In the present instance, the removal of the rock at Clare will permit a body of water equal to that at present impounded in the river, thence up to Ennis, to pass up and down at each tide. The quantity will be still further increased by the removal of the "Crow-bar."

One of the first objects of science should be to direct the operating forces of nature, as far as possible, to useful ends. The beneficial effect of the large additional volume of water above alluded to, amounting on an average to 35,006,400 cubic feet, or nearly 1,000,000 of tons weight, passing through the channel four times a day, will add greatly to the scouring power in the channel throughout the estuary; whilst the increased draught, and consequent velocity of the flow and ebb of the tide, will be of essential service to the speedy entrance to, and departure of vessels from, the port.

The details of the proposed improvements are as follow:

To erect an iron beacon on each of the Horse, the Foal, and Boland's Rocks.

To cut a channel through the Crow-Bar of 150 feet in width, and to such a level as will give a depth of 15 feet through it at high-water of neaps, and 20 feet at that of ordinary spring tides; and to mark both edges of the channel by iron beacons.

To cut a channel in the direction shown on the Plan, No. 3, through the rock at Clare, of 80 feet in width in the narrowest part, and to the level of low-water of spring tides; thus affording a depth of 13 feet of water at neaps, and 18 feet at high-water of ordinary spring tides. A depth of 5 feet of the crown of this shoal will be removed for drainage purposes; the expense of which will be charged upon the lands drained, and consequently saved to the navigation.

It is also proposed to erect a new bridge at Clare, consisting of two stone arches of 40 feet waterway each, and a cast-iron swivel arch for the passage of vessels of similar waterway. To allow the present bridge (which is a bad structure, and as far as the roadway is concerned, a public nuisance) to stand, until the completion of the new one, when it will be taken down, and the materials composing it used in the works. The improvement in the line and level of the roadway will be seen on Drawing, No. 2.

It is proposed to make a towing-path on the western bank of the river, from Clare to the terminus of the navigation.

To make the terminus immediately below Clonroad Bridge, which is within a quarter of a mile of the town of Ennis.

To make a quay-wall 600 feet in length on the Lifford or north bank of the river; a channel or basin in front of it 200 feet wide; and a wharf, with a road leading therefrom to the main line to Ennis, in front of the new Court-house.

It is proposed to make the quay-wall and basin for the greater part in a new channel, through the point of land stretching from the Brewery towards the Currovaurin Stream, and to fill up the old channel of the Fergus on either side, as shown on Drawing, No. 4. When the drainage above Ennis shall be effected, it will have the effect of drying up the Currovaurin River; so as that a sluice through the embankment thrown across the old course of the river will be sufficient for discharging the internal waters.

In the event of the increase of trade requiring a larger degree of accommodation for vessels, a floating basin could be made with facility, in the site shown by the dotted lines on the General Plan.

About midway between Clare and Ennis, there is a metal bridge erected over the river, in connexion with a new line of road leading in the direction of Quin, &c.; both bridge and road are at present in an unfinished state: the former, after repeated failures in consequence of the softness of the foundation; and the latter, which was one of the Relief Works, for want of funds.

There was a presentment of from 800 *l.* to 1,200 *l.* sought for at the present spring assizes to complete this bridge, but was refused by the grand jury, partly in consequence of the largeness of the sum and the present high taxation on the county; but principally, I understand, lest it should interfere with the contemplated navigation of the river. After nearly two years' residence in the locality, I am of the opinion expressed in my former Report to the Commissioners, that the bridge should be cleared away altogether, and not suffered to remain as an obstacle to the navigation up to the town; besides, another road with a better entrance into the town can be bad, without to any material extent increasing the distance; I have marked this line upon the accompanying General Plan, No. 1; it will be seen that it is proposed to branch it from the already "formed" new road, about half-a-mile eastward of the metal bridge, to pass through the village of Doora, by Cappahard House, and over the embankments aforesaid across the river, by the proposed wharf and new Court-house into Ennis. By this line the necessity of a bridge over the Fergus is altogether precluded; the distance by it is much nearer to the proposed terminus of the navigation, to the Poor-house, and new Court-house; equal to the County Club-house, almost so to the Hotel, and not an eighth of a statute mile increased to the centre of the town.

The new line can be made in conjunction with the navigation for the sum sought for finishing the metal bridge. This item has not, therefore, been included in the estimate, as it is properly chargeable to the county, and does not strictly belong to the project under consideration.

In the event of the navigation being proceeded with, the metal bridge, as public property, could be made available in some other parts of the county.

The estimated expense of effecting the works enumerated (exclusive of the new line of road), is as follows:

ESTIMATE.

	£.	s.	d.
Excavation in rock and gravel at terminus of navigation, in site of quay, basin, &c., in channels through the rock at Clare, the Crowbar, &c.	15,973	15	–
Deduct cost of excavation in same space that will be executed for drainage purposes	2,183	–	–
	13,790	15	–
Quay-wall at Ennis, including formation of wharf, &c.	3,095	–	–
Masonry and metal-work in swivel bridge at Clare	1,861	11	3
Enlarging embankment (beyond what is required for drainage purposes), and forming towing-path thereon from Clare to terminus of navigation	623	–	–
Rough paved wall at Clare, between the quay and bridge	88	–	–
Lifting loose rocks and stones in parts of channel below Clare	150	–	–
Erecting six cast-iron beacons on dangerous rocks	150	–	–
Probable compensation for damages	550	–	–
	20,308	6	3
Superintendence, 10 per cent.	2,030	16	8
Unwatering works, and incidents, 5 per cent.	1,015	8	4
	23,354	11	3
New bridge at Clare, consisting of two 40-feet arches, including retaining and wing walls, roadway, &c., chargeable to the county at large	1,797	3	9
TOTAL £.	25,151	15	–

It would be difficult, under existing circumstances, to give a statement having much pretension to accuracy of the beneficial effects of, or return likely to accrue from, this outlay. If conclusions were drawn from the analogy afforded in similar cases, it would probably exceed any expectations that could be entertained at present.

Referring to the history of all great towns, we find their increasing wealth and importance referable to maritime commerce. Even the flourishing condition of inland towns depends in a large measure upon neighbouring seaports.

The statistics of seaports freely open for navigation show a great increase in trade during the last 20 years; and we find the extension of trade developing all other resources and improvements: the towns are watched, cleaned and lighted; new and commodious streets, markets and quays erected; a better system of agriculture in the adjacent country follows, and, as a matter of course, its produce increased.

The wealth of the community and the public revenue are enhanced simultaneously with the sources of employment for the mechanic, farmer and labourer.

It is but reasonable to expect, that had Ennis a navigation, it would partake, to a great extent at all events, of the general march of improvement. It is as near the mouth of the Shannon as Limerick, in the midst of a good agricultural country, and, as before stated, so situate as to be the most convenient and natural emporium of a large surrounding district. Without entering into the question of its being ever able to compete with Limerick (which has superior advantages, natural and acquired), or other similarly prosperous ports, it is but reasonable to expect that it would become a useful third class port, dispensing numerous benefits upon the trade and inhabitants of the town and surrounding country, calculated to develope industrial enterprise and speculation (which is indeed much wanted), and a corresponding increase in the Customs and public revenue.

As the benefits that may be expected to arise from the measure would be shared between the surrounding district and the public revenue, the powers conferred by the Drainage Acts, particularly by the 32d and 33d sections of the 9 Vict. c. 4, are peculiarly applicable to have the project carried out under their provisions. The 32d section provides, that if it be found, after the commencement or completion of works of drainage, that by some additional works a useful navigation can be made, that such navigation may be made, &c.; and the 33d section enacts, that in cases where a moiety or more of the expense is granted under the authority of Parliament, that the other moiety or residue will be charged over the district declared by the Commissioners of Public Works to be benefited by such navigation; and that thenceforth the port shall be open to the public, free of tolls or dues, excepting such as may be required for the maintenance of the works.

During the last year there were no less than 47 seafaring vessels, and 448 smacks and hookers, arrived at and sailed from the quay at Clare. The aggregate of the imports and exports amount to 21,671 tons, and on an average, the cost of carriage of these merchandize to and from Ennis was not less than 1 *s.* 6 *d.* a ton, equal to 1,625 *l.* 6 *s.* 6 *d.*, which is no inconsiderable sum to be taken from the profits of such a limited trade. Even the article of coals costs the consumers from 1 *s.* 6 *d.* to 2 *s.* a ton more in Ennis than in Clare (only three miles distance), and all other articles in proportion.

With an improved navigation, admitting freely at all tides, and without danger, a large class of trading vessels up to Ennis, it is not unreasonable to expect the increase in its trade and improvement will exhibit the gratifying advancement that similar towns have experienced within the last twenty years; and in the meantime the expenditure of the cost of the works would be valuable in promoting an industrial system of employment, and a reproductive and lasting improvement.

Reclamation of large Tracts of Slob Land.

In connexion with the preceding measure of improvement may be advantageously effected another of considerable importance, namely, the inclosure and reclamation from the sea, by means of embankments, of large tracts of slob lands, lying on either side of the navigable channel from the Shannon to Clare.

The project is introduced here for two reasons: firstly, in consequence of its connexion with the further improvement, or rendering more certain the improvement, of the navigation of the Fergus, and the advantages both projects would derive from being carried on simultaneously; and secondly, of its own intrinsic importance, as a measure calculated to afford an extensive source of employment, both in the formation of the proposed works and after cultivation of the lands, and a large and certain return upon the necessary outlay.

As the subject has not been officially brought before the Board, I shall merely explain somewhat more fully the reasons above given for introducing it.

The greater part of the estuary of the Fergus, as before stated, is composed of a slob or mud bank, which rises generally to about half-tide level, some higher and some lower.

The channel through it is rather tortuous, and at high-water, when the slob is covered, can be navigated only by pilots intimately acquainted with the river and land marks.

Next in importance to deepening the channel would be defining its course, so as to prevent the liability of "grounding," by going too close to the banks, or in rounding the angles; this object would be attained by raising embankments at proper distances along its course for inclosing the slob lands.

The scouring power and depth of channel would also be improved by this course. Up to half-tide, the velocity of the flow is about three knots an hour through the greater portion of the channel. After it rises above that level, and spreads out over the extensive flat plains adjoining, it loses much of that velocity and its corresponding scouring power. At the ebb of the tide, the same is the case, until it falls to about half-tide level; and thence till low-water, and for some time after, the numerous small streams produced by the remains of the last tide, issuing from all parts of the slob, carry with them large quantities of mud and debris into the channel.

Were the waters confined to a proper breadth of channel, the velocity of the tidal currents would not only be more uniformly increased, but its scouring action directed to deepening its bed, instead of removing, with a less force, the accumulations at present flowing in from the slob.

The increased velocity of the tide would also be of essential service, as before stated, in bearing the vessels into or out of port.

Another consequence of this improvement would be the propagation in the rise of the tidal wave up at Clare and Ennis, and possibly, to some small extent, even at Limerick.

The extent of land that could with facility be inclosed, amounts to 3,870 statute acres.

Persons acquainted with the nature of these slob lands know well that they are of the best description; and when inclosed from the sea become most productive and valuable, requiring no manure for many years subsequent to their reclamation.

The length of embankments required for inclosing this extensive tract is about 9½ statute miles; and its height (by raising it 6 feet over high-water of spring tides) would be generally about 15 feet.*

There are no rivers entering the proposed inclosures, and but few streams, which are so small as to be easily controlled by a few sluices.

I would propose to run out short banks from Ing and Cleana points to the main embankment, which would have the effect of dividing the slob on the east side of the channel into three separate inclosures. By this means, large divisions of the lands could be brought into cultivation ere the whole work would be completed; and should a breach ever occur in the embankment (which, however, is not to be apprehended, from the description of work proposed), its effects would be confined to the inclosure in which it might happen.

Another great advantage arising from this measure would be the protection of the embankments raised along the present line of high-water; the effectual security of the large tracts of lands, amounting to 4,200 statute acres, inclosed by them, which in many cases are in a precarious state, and the improved drainage power, by means of deep and capacious sluices, which they do not at present possess.

The expense of making all the embankments, back and main drains, sluices, &c., together with scouring and deepening 6,400 perches of drains through the lands already inclosed from the sea, and repairing 1,280 perches of present embankments, I have calculated, upon liberal prices, to be 65.540 *l.*

Considering the rich quality of the slob lands, the components of which form, in fact, a mass of manure, and their situation with regard to the towns of Ennis and Limerick, I believe it will be generally considered I am under the mark in estimating their rental value at 2 *l.* a statute acre. The benefit the other lands included would derive is proportionately low, as follows:

	£.	*s.*	*d.*
3,650 statute acres of slob lands, at 2 *l.* per acre - - -	7,300	–	–
220 statute acres of grass lands covered by each tide, and which are at present of little value, will be improved 1 *l.* per acre - - - - - - - - -	220	–	–
4,200 statute acres of meadow lands, at present inclosed, will be improved by preventing the " wear and tear " upon the present embankments, and by deepening and scouring the internal drains, and keeping the water at all times considerably under the surface of the lands, by means of deep and superior sluicing power, say 4 *s.* per acre - - -	850	–	–
TOTAL - - - £.	8,370	–	–

which alone would yield a profit of nearly 13 per cent. upon the expenditure.

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* I deem it necessary to state, that for much of the information required for arriving at these conclusions, and for many of the tidal observations alluded to in preceding parts of this Report, I am indebted to the Admiralty Chart of the Shannon and Fergus, made by Captain Wolfe, R. N., in 1840.

I have not the least doubt that eight years' net produce of the lands would pay off the whole outlay.

The work might be undertaken with great advantage in conjunction with the navigation. The expense of the stone facing forms a considerable item in that of the embankment. Upon calculation, I find there would be just about enough of stones had in the rock cutting at Clare for the purpose. In excavating the channel, the stones could be thrown into flat-bottom barges, "dropped down" by the tide, and discharged along the seat of the embankments. By this means there would be a saving effected of nearly 4,000 *l.*

The proprietors* of lands adjacent to estuaries, &c., in other parts of Ireland, have in many instances received permission from the Lords of the Admiralty to inclose and reclaim sloh lands, similar to those under consideration, subject to a small or nominal rent-charge; and the improvements are being carried into execution under the provisions of the Drainage Acts. If this project be proceeded with in a similar manner, I would beg leave to recommend it to the favourable consideration of the Board.

(signed) *John W. Kelly*, C. E.

Drainage Commission Office,
Ennis, 6 May 1848.

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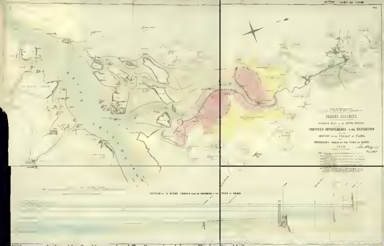
* In this case the principal proprietors are, I understand, —— O'Grady, Esq., Sir David Roche, Bart., John Singleton, Esq., Sir Lucius O'Brien, Bart., M.P., Marquis of Conyngham, —— Walfe, Esq., &c.


No 8
RIVER SHANNON
SECTION of the RIVER FERGUS from the SHANNON to the TOWN of ENNIS

FERGUS DISTRICT

DIAGRAM PLAN of the RIVER FERGUS

PROPOSED IMPROVEMENTS in the NAVIGATION

from the SHANNON to the VILLAGE of CLARE,

and EXTENDING THENCE TO THE TOWN OF ENNIS.

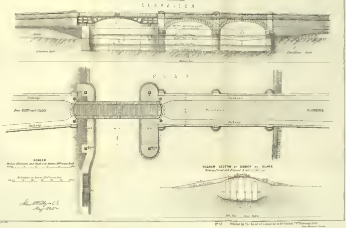
1846

FERCUS DISTRICT _ COUNTY OF CLARE

PROPOSED BRIDGE AT CLARE.

SHOWING THE SWIVEL ARCH.

for Extension of the Navigation up to the Town of Ennis



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May 1848

No 19 Ordered by The House of Commons to be Printed 15th February 1849

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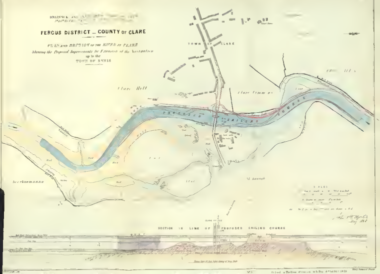
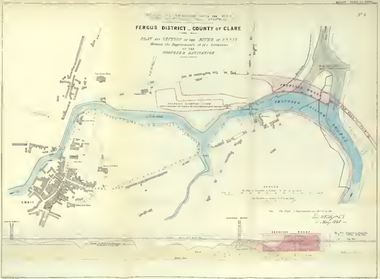
PLAN AND SECTION OF THE RIVER AT CLARE
Shewing the Proposed Improvements for Extension of the Navigation
up to the
TOWN OF ENNIS



FERGUS DISTRICT _ COUNTY OF CLARE

PLAN AND SECTION OF THE RIVER AT ENNIS
Shewing the Improvements at the Terminus
OF THE
PROPOSED NAVIGATION



TOWN OF ENNIS.

REPORT on the IMPROVEMENT of the NAVIGATION of the River *Fergus*, from the *Shannon* to the Village of *Clare*, and its proposed EXTENSION thence up to the Town of *Ennis*.

(*The O'Gorman Mahon.*)

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